

# Management of COVID-19 Pandemic by Kerala Police – An Analysis of Disaster Management Mechanism through the Lens of Community Resilience Approach

Prayaga M.A.<sup>1</sup>

## Abstract

*The year 2020 can be earmarked for the excellence as well as trendsetter in the professional front of Kerala police team. Dangerous floods from 2018 and the recent pandemic days vividly altered the entire gamut of policing throughout the state. While we calculate the proximity of the force among public, they are into the shoes of first-hand responders. This so-called response notion within the common man is the reason for the upsurging dependency on police for all daily measures taken by the legislation. Usually in the process of disaster management, each step is carried out by different stakeholders but in the recent instances starting from flood till the latest days there exist no step where the act and presence of Kerala police was lagging. Thus, an inclusive involvement by encouraging more community systems within a fit adaptable environment turned to be the most exciting contribution of the force, however, certain lacunae need to be filled in along with the change in tone of complex nature of the ongoing pandemic situation. This paper sheds light upon the collaboration of the force through this changing perspective which they collectively applied in the recent Covid days. It further elaborates the change of approach connivance by the team into a more holistic to sturdy community resilience method. The paper concludes by going through certain analysis for improving the effect of these implementation procedures.*

**Keywords:** Police, Disaster Management, Vulnerability, COVID-19, Community, Resilience.

---

<sup>1</sup> Prayaga M.A., (ICSSR Doctoral Fellow 2019) Research Scholar in Public Administration, Department of Political Science, University College, University of Kerala, Thiruvananthapuram, Kerala.

## 1. Introduction

Police force in Kerala intervene the very life of common man. They act as the coercive arm of the state thereby extending duty to maintain law and order making their presence in different gamut of life of the people. Prevention of activities having criminal flavors and offenders with the same tone do add to the rising influence of the force within. They thereby contribute an imperative role in imparting security as well as dignity to all its citizens. Adding to their box of duties, police also deliver a set of activities that include social, economic, and political situations essential to preserve integrity of our land and contribute towards its upliftment and development. Undoubtedly, the character of force in our country is exceptionally remarkable with view of the changing politics, democratic polity, multi-cultural, multi ethnic and large size diverse population of India (Sen, 2019).

Kerala police through their ubiquitous perceptible presence and action do affect every single Keralite and everything in the land of God's own country. By a near monopoly and ambiguity of other legal forces policy actions of COVID-19 management period during these days they alone provided for the whole handed security of Keralites and extended their full involvement in the law enforcement during this pandemic situation. This adaptable intervention at various situations of fancy vagueness in pandemic management steps due to the novelty of such occurrence, helped the policy institutions to get along with the puzzled daily execution of different decisions. For instance, project like "Project Eye", "Kasaragod Initiative" by the police itself can be taken as good examples of their adaptable involvement along with other policy- stakeholders in the initial stage of this COVID-19 management phase (Anand, 2020). Though police personnel turned hectic and overburdened during the extraordinary days they prudently determined the special decentralized manner accordingly the democratic decisions of the state machinery were implemented timely.

More than any stakeholders entrusted with the task of ensuring democratic decisions, it was policing which assured equality and dignity to the numerable minorities and weaker sections of the society due to the proximity in their relation with the common man. They formed the 'backbone' to the entire pandemic management mechanism with necessary resources in all means. Such holistic intervention among public from a closer government agency is quite necessary to get the community 'back-on-track' during such a crisis situation.

Clearly, the role of police in the state of Kerala was reassuring during the time of this pandemic hit period. It is high time that the degree of these reassurance in police system needs to be well stated and analyzed during any such complex situations for a more community-oriented action which is comparatively reliable and sustainable in its goal-achievement. The study well contains a triangular method which surrounds a clear analysis, verification and suggestions for further inclusiveness of police involvement in a more democratic- ecologically focused manner within the present institutional framework (Ghosh, 2020).

## **2. Study Area**

The study is focused on the Kerala police force and the role they played in managing Covid-19 days. The area selected for the study involve two districts Thiruvananthapuram and Kasaragod. These regions were selected due to the initiation of more community-oriented programs by police during this pandemic hit days.

Main objectives of this study can be pointed out as: -

- To analyze the managing mechanism during COVID-19 Days by Kerala Police – a Mechanism for Disaster Management from a Group Resilience Lens approach.
- Identify the effect of various measures taken by state enforcement agencies which included various strategies for facilitating a balanced community resilience environment.
- To access the out-turn and recommend measures needed for improving the force involvement through studying the level of interference in different phases of managing this pandemic situation.

In General, this analysis can help to improve the understanding of the role of police in carrying out such situations and thereby would help to make action-contingency plans for dealing with such an extreme situation in a more environmental-development approach.

## **3. Methodology**

The methodology used in the study is empirical and content analysis. Empirical study was carried out in analyzing the programs initiated by police force and in getting an

effective analysis these data were used. Random sampling was used in taking the survey report from the population in the area of study. It involved interaction in a form of surveys, interviews, news and other means of communication with the participant in a bid to collect the necessary information. Primary data collection was carried out using this method. Secondary data and analysis were carried out using content analyses from different articles on media. The study is carried out by analyzing the police working method from March 2020 to March 2021.

#### **4. Analysis**

It was on Jan 30, 2020 the first case of Covid-19 got reported in India which was based in the state of Kerala. Government machinery got into the track of imposing regulations by taking assistance from different agencies in governance system. It was a great challenge for the entire system of administration to cope up with novel situations each day with regard to this new pandemic outburst. It was after three months when the whole situation started to turn darker the police got entrusted to carry on with framing more functional regulations and restrictions so as to contain the further spread of this dreadful virus (Anand, 2020).

On 23<sup>rd</sup>, March, Top officer from the list Vijay Sakhare IPS was deputed by Chief Minister of Kerala Pinarayi Vijayan to the worst hit Covid region of the then period, north district of Kasaragod. This region was emerging as one of the worst hit COVID-19 hotspot. A new move steered up by Kerala Police in a people friendly regard paved the way for new form of discussion on “Kasaragod Initiative of the Kerala Police” – as a model to be pursued by other badly Corona hit regions of the nation (Kumar, 2020). This need to be regarded as the initial step towards a community-oriented resilience method that got implemented by the force.

Primarily police are an agency conceived with the maintenance of law and preservation of order. However, COVID-19 management by the police opened a new addition in the approach towards the force. One of the major roles played by the force in pandemic management can be connected with implementation of mechanism to contain COVID-19 spread.

The most wondering and appreciable part is that police without any prior training or any SoP to counter such dangerous situations did rise to the occasion in an evolving

nature. The involvement of police in COVID-19 management need to be analysed in three phases (Ghosh, 2020). Phase I was with outstanding action and result starting from March 2020 to August 2020. Phase II from September 2020 to November 2020 and Phase III from December 2020 to March 2021. Phase II witnessed many pitfalls that got risen as a result of too much work division upon force. From the study researcher got the report as when the I phase period was a tremendous success which even became a trend setter in the whole management of COVID-19 situation in a very constructive manner as laid down by police. Furthermore, most of the government machinery began to follow those initiations as developed by police to handle the situation. Mainly because of the over burdening of the function and lack of a well-knit SoP system the regular functioning of the force got into a new state of confusion. Overburdening of the duties without proper synergy among other departments is further aggravating the unbalanced situational rise.

At the time of this model's inception the community orientation was not directly included. This particular method of allowing members from the area to get on work with these public officials and providing assistance to quickly rebuild and overcome the disasters effect started after the success of this Kasaragod model. Following this in Nemoom a region under Thiruvananthapuram Corporation started with the volunteer involvement in managing the conflicts and tensions of these crisis period. If we take an account of these different phases of police action it is quite evident that when this sort of community orientation was facilitated the COVID-19 management was more democratic and people-centred. The result of a collective effort under the supervision of police turned to be very effective in reducing the pandemic spread among the locals (Anand, 2020).

#### **4.1 Novel Strategies by Kerala Police in COVID-19 Management**

Kerala police showcased its best side in managing this pandemic situation which can be an added advantage in its community policing status. The Pandemic situation provided an opportunity for the force to explore the level of their creativity in facing challenges at any range. This is clearer when we analyse the strategies which Kerala police involved while dealing with this crisis situation. The given picture clearly depicts those different steps carried out by the police personnel during these situations (Figure 1).



**Figure 1: Different steps carried out by the police personnel during Covid-19 situation**

(Source: Survey Report)

*i) Lockdown strategies*

This model became a turning point in the entire history of pandemic management worldwide with the experimentation of ‘triple-lock down’ concept. This was a crucial step taken by police unlike in any part of the world (Varma, 2010). They adopted a new resilience strategy which can be named as ‘containment strategy’. It was based on three phases of locks which were named as Lock 1, Lock 2 and Lock 3 that were implemented to ensure that the public do not get mix up. This strategy had reduced further infectious spread of COVID-19 in Northern regions of the district. Inspector General of Police imposed three locks in the district which was clearly in line with the central governments lock down measures also in tune with states. This great initiative paved the ground for chances to arrest the further spread of the deadly virus in the particular region. The three-pronged strategy is highly appreciable which need to be put forth as directly from the police force for the National Disaster Management authority to formulate new model of disaster management accordingly with this strategy (Ghosh, 2020).

Lock 1 strategy included fundamental policing strategies that included road block and mobile patrolling. This step assured in controlling the movement of people thereby curtailing the public commuting from their homes. Lock 2 strategy

involved implementation of a Geographical Information System thereby mapping all the COVID-19 assured cases, list of home quarantined people, every expatriate from foreign places and primary, secondary contacts who mingled with already positive tested persons. As a result of enforcement of this strategy in early itself police could identify the core Corona 19 hit seven areas of the region and located the nearby five police stations (Ghosh, 2020). This step further helped the police team to strategically isolate the areas with high positive cases by cordoning them off. Thus, all roads were completely blocked and movement in and out got halted for the lock down period in adherence with central and state measures. A third lock was then declared by police by announcing the seven places as Covid Containment Zone. Police strategically implemented their master plan even before State Disaster Management Authority and the force was successful in isolating the worst affected area of the state from rest of the districts which in turn reduced the out flow of dangerous spread of COVID-19 in entire Kerala.

*ii) Reverse Quarantine Strategy*

The much-applauded strategy of reverse quarantine opted by state of Kerala allowed the pandemic days to march into flatten COVID-19 curve. In adopting this methodology in dealing with COVID-19 situation state policemen extended a whistling role. Police got into the strategy by collecting and properly analyzing the list of people who came to the state from abroad by connecting their route maps of stay in this state. They were able to quote down the days of their stay at home, list of met friends, list of family kith and kin they mingled with those days and prepared detailed list of primary and secondary contacts. A third lock of the mechanism went through these positive tested NRIs after identifying their contact list from the already prepared route map by police (Anand, 2020). Men in uniform adopted two strategies for ensuring their complete lock down, it was fostered either through locked down in isolation with help of technology or by adopting traditional methods of Kerala policing. This was further carried out by deploying police to their house fronts. They were given in charge of 10 to 12 houses of these charted persons.

*iii) Police Surveillance Strategy*

Another worthy step by Kerala police is in its use of modern gadget of drone to watch an eye on those heads who purposefully flout the period of lockdown. This idea got

initiated with the new project launch of the team, Project Eagle Eye when around 350 drones were tracked into the air of state to lock down these law breakers. This was another major helpful step by police in the state where modern technology was used as a tool to accolate with manual mode of surveillance, where the latter event was not possible due to strict rule of social distancing throughout the State.

Further a new gadget took hold of the scene was the drone. In most instances it was the drone surveillance that helped Kerala police to curtail the inappropriate behaving of people during lock down. Here too all, houses where primary and secondary contacts got resided were brought under the surveillance contact of police drone. Safety applications concerning COVID-19 got installed in the phones of all these primary and secondary contact list of positive tested people.

This really equipped the well-established information technology facility of Kerala police. If at all any quarantined person tried to leave the locked down premises police used to get an alert. In such cases they rush to the locked down areas and do shift such people to government quarantine facilities and never went for traditional initiation of stringent legal actions against them. Here we could notice the change in behavioural pattern employed by the entire police team during such a serious pandemic situation (Ghosh, 2020).

A large number home quarantined people had to face the consequences of the negligence during lock down. District police were successful in launching and continuing with the service of home delivery especially in COVID-19 containment zones thereby able to deliver essential commodities at the doorsteps of those people. This step further ensured the safety and strength of quarantined society of Kerala.

#### *iv) Community Police Strategy*

In some districts of the state, for instance 'Kasaragod', police were able to launch a 'Kasaragod Suraksha App' which aimed to provide telemedicine to this isolated section and ensured the availability of doctor online for various other ailments. Throughout the state of Kerala, the entire police team wore the dress of Covid Warriors Day and night seamlessly and their support in of containing the further spread of Corona 19 (Varma, 2020). Thus, the police adapted to new defined role of 'community police' by transforming into the front line Covid Warriors along with the Health & Sanitation workers.



*v) Awareness Campaign Strategy*

An educative awareness class got carried out by community policing team of Kerala on the relevance and need of staying safe their homes by paying a visit to these quarantines people and to their relatives. Though the mass awareness campaign got initiated by Kerala government during 15th March, 2020 under the tag 'Break the Chain', this decision was properly enforced during the community by the police during the lockdown days from 24th March 2020. Throughout the study the well framed and proper application of a community-oriented disaster management mechanism got build through this awareness campaign strategy by the force. To ensure whether people stay at homes, a check point at each main junction got started. This got wide reach when regional volunteer groups also got into action.

The M-Beat initiation arranged for the interaction of police with public was another step which marked an evidence for a community oriented pandemic situation management mechanism. Also, along with this movement different sorts of public encouragement to wide use of electronic technology like WhatsApp, mail, to submit grievances by public during these days. POLAPP, the police application for ensuring public participation in managing the effects of the crisis situation was a great success too in determining a foolproof community resilience mechanism (Anand, 2020).

A novel initiative of home delivery system in 'Covid Containment Zone' of Kasaragod district got started in the name, 'Amritham'. Social media platform of WhatsApp was used very effectively and the phone number coordination were directly controlled from police corona control room in order to ensure safety of public details. A similar program got introduced in Wayanad district also but with different name, 'Safalyam'. Senior citizen helping programs were included through a plan named, 'Prashanthi', particularly aiming those aged people who are staying alone at home. This was a 24x7 service using a toll-free number of police. Another one striking initiation that got applause was the 'Bask in the Mask' campaign, through which masks got distributed to the public by police force. This policy was to create more awareness among public to make a habit of wearing mask regularly and properly.

*vi) Collaborative Strategy*

Police, people, government all are functioning within the society. No single entity can exist without getting interacted with other stakeholders of this society. This sort of interaction was continuing pre-pandemic days in a name's sake manner. However, pandemic hit days gave us a different experience where all the stakeholders need to interact if they want to sustain. Among all the stakeholders it was police force which had to maintain a close collaborative tone throughout due to its primary respondent label during any crisis situation.


Police need to maintain timely, proper relation and coordination with district administration, health department, labor department, railways, NGOs, fire department and other regional offices. This falls an additional duty upon the force. Moreover, state police force acted as a bridge between community and other government agencies in ensuring the availability of basic essentials, food kits, ration, medicines and other personal assistance (Anand, 2020).

An E-pass system got initiated by Kerala police particularly for making the movement of people under regulated control. In order to receive the pass, public need to initiate the application through proper channel of Kerala police website under strict procedures. Once they submit the form for pass, the same will be assessed and after stringent verification strategy police will issue the pass for the concerned situation. This is also known as 'Pass B-Safe' (Figure 2).

If the government official need to travel for their work-related duties are to carry with them the identity cards issued by the concerned department always. Nevertheless, public were allowed to interstate under special cases only if they carry the acquired travel pass obtained digitally from the police covid assistance portal named, 'COVID-19 e-Jagratha'.

Usually, the travel which are of least urgency were prohibited under strict regulations and normally cases were registered. Below given is a figure showing the list of cases registered under this particular situation of charge due to curfew violation.

**COVID-19**



**KERALA POLICE**

No.....

..... PS

..... District

Date .....

**TRAVEL PASS**

The person/s mentioned is/are allowed to travel in emergency situation.

SL. NO	PARTICULAR	COMPLETE DETAILS
1	Name(s)	
2	Date of Travel	
3	Vehicle No. & Driver's Details	
4	Travel From ..... to .....	

**REASON FOR TRAVEL**

Medical emergency of self or family members	
Death of family member (Attending Funeral)	
Joining the family after being stranded due to lockdown	
Bringing back family members stranded due to lockdown	
Rejoining work/duty after	
Students stranded coming back home	
Marriage (Self / Close relative)	

Office Seal

To, #Name

#Address

**Station House Officer**

.....

Note –

1. Above mentioned person/s shall produce "valid photo id card" along with this letter whenever they may be asked to do so by any Govt. Authority and shall comply with all Government orders issued in connection with COVID-19.
2. Doctors, Nurses, Media personnel need not apply for such travel pass.
3. If any Government Authority has any difficulty in compliance of this order, they may contact DGP & State Police Chief, Contact No.0471 2722500, 9497900286, 9497900296
4. The emergency travel pass is issued as per information sent to us, which if found false or there is any misuse of pass, the applicant /holder will be liable for legal prosecution.
5. The permission given will not have overriding effect on the powers of local/other State Police authorities to give directions as they deem fit in respect of the lockdown.

Figure 2: Travel Pass B Safe

(Source: E-Jagratha portal, Government of Kerala)

## 5. Discussion

Reverse quarantine, the practice of detaching the most vulnerable groups from common man was another successful step in the pandemic season adopted policies by state. This particular step of quarantine was enforced through a well-established local body administration. Police were included right from step 1 of the new policy till the last ongoing step. The involvement of police personnel during and post this step need to be regarded most appreciable in making the whole process more people friendly (Anand, 2020).

Therefore, the big lesson learnt from Kerala successful model of COVID-19 during the given period battling is that among all the stakeholders involved police played a noteworthy role by ensuring their full spirited role and presence throughout the effective implementation of this decision. This is by standing close to the community and by providing spaces for the community to participate in these situations (Ghosh, 2020). Reverse quarantine got enforced by providing medicines, food, counselling sessions and it further ensured the availability of any other assistance to those population who went for this type of quarantine.

How Kerala was able to flatten the curve is directly related to the various measures adopted by the law enforcing agencies of the state, which included different strategies like social distancing, self-isolation, and reverse quarantine. This was the scientific world-renowned methodology adopted by Kerala society to slacken unroll of corona virus by joining full hands and moods with the most important agencies of disaster management, the police (Anand, 2020).

Local self-government department were given complete in charge of successful implementation of reverse quarantine by the State. The department gave the role to police in collecting the first-hand list of primary groups and there by police played another auxiliary role with local self-government in imparting service during these lock down days. The primary list prepared by the team with the help of police included elderly people, palliative care required ones, cancer patients; cardiac ailment people, heart surgery done people, persons with respiratory problems, chronic disease people and the set also included the immune compromised people.

When compared with the survey of surveillance post drone deployment, the area coverage of regular police surveillance got improved to more inaccessible and unfamiliar terrain got involved by the new police aid. The idea got mooted as part of 'Break the Chain' campaign of the State government.

The initiated the idea of Operation Eagle eye with help of drone operators' association. During the period of those pandemic management, it helped police team enormously in locating rule offenders as well as illicit liquor brewing were also detected using this gadget. In total illegal and unwanted gathering of people during the lock down were seriously brought under strict surveillance thereby reducing the cause for further spread of the malady. Beside all these initiatives Kerala police social networking platforms are very well used in offering different services to people of the state (Anand, 2020).

## **5.1 Challenges Faced by Police in Different Phases of COVID-19 Management**

### **5.1.1 Phase-I Challenges**

- Enforcing lock down norms
- Quarantine enforcement
- Border management
- Management of passengers at railway station/ airport
- Containment zone regulations
- Contact tracing
- Guest worker issues
- Awareness Campaigning
- Mask, Social distancing and Sanitisation rule enforcement
- Social media campaigning and problems
- False/fake news alert
- Distribution of food, medicines and essential commodities

The entire force was trained along with the deployment procedures in order to carry out with these challenges. They went through these challenges in a very packed and mobilised manner during the period.

### **5.1.2 Phase-II Challenges**

- Change of guidelines, rules and regulations continuously
- Comprehension of those changed regulations and order in stipulated time
- Spread of Covid-19 among personnel in an unprecedented rate (Rise in death case)
- Patrolling got into different forms like foot, motorcycle and also Janamaithri Beat got deployed into various spots
- Zone classification duty (Red, Orange & Green) depending on the severity of Covid-19 spread turn to be more tedious with change in regulations weekly.
- Social distancing & quarantine protocol observance turned to be primary and most challenging duty for the force.
- Due to illicit liquor production special drive got formed in lieu with special teams with excise departments.
- Crime rate increase- domestic violence, POSCO cases

### 5.1.3 Phase-III Challenges

- Exam conduction challenges
- Back to normal life in the early days of 2021- public transport and control
- Bus bays, train stations patrolling
- Unlocking process management was another area where police had to keep an extra eye.

## 6. Conclusion

Human history is entangled in the skirmish against an unseen enemy, proliferating at a rapid rate throughout the world. The times are truly challenging in all respect. Specifically, in the case of India, it has also emerged as a COVID-19 hotspot over a span of month or two. The police took the best measures to stop spreading, with the help and support of the government.

Thus, police by joining hands with all stake holders were able to render a whole hearted supportive system in tackling the menace. Without taking unnecessary leaves and off duties period the able officials placed their thwart in giving out their full chord support in making the COVID-19 curve flattened for the state of Kerala. Kerala police holds an ever shining applaud able place especially in formulating well-structured disaster management techniques and methodologies coming out of the shell of traditional Laissez-faire system. The proactive, adaptable, trained, focused, sharpened work force was truly used by the entire team in reaching this conclusion. Hereafter the science of disaster management will never stand aloof from the law-and-order deployable work force.

It is extremely commendable how Kerala police implemented the measures to contain the pandemic in a best possible way. They've flattened the COVID curve spread in earlier stages, using the initiatives like "Kasaragod" and "Eagle eye". These initiatives demonstrate outstanding results, and has helped helps track, deter and inspire future innovations. The incident such as "Lock 1, 2, 3 demonstrate very successful implementation process. Kerala Police and Government have been cooperative in implementing and improving people's health conditions. They've been laid substantial effort towards effective implementation of the preventive measures. Many methods will be effective in preventing the Population's onset of broad transmission. Such

interventions also have an extraordinarily high degree of public awareness and acceptance. Kerala police are the best example to other nations. With the efforts of the aforementioned initiatives, the government is ready to fight pandemics. Nevertheless, every day is overwhelming in the current scenario as the number of positive cases in the country is rising daily. It's a tough, but initiatives should be enforced more effectively and reliably.

## Acknowledgements

I would express sincere gratitude to the editorial board NIDM for the opportunity to publish this paper. I am thankful to ICSSR, Govt of India for the financial support through the Doctoral Fellowship on my research topic. I am also thankful to Dr. P.G. Balachandran Pillai, my PhD supervisor and reviewers whose comments and suggestions helped to improve the quality of this paper.

## References

1. Anand, Shilpa. (2020, April 13). Kerala Police's Project Eye uses close to 350 drones to track those flouting the rules of Covid-19 Lockdown. The Hindu.<https://www.thehindu.com/society/kerala-polices-project-eagle-eye-uses-close-to-350-drones-to-track-those-flouting-the-rules-of-lockdown/article31331170.ece>
2. El Alaoui, Aicha& .P, Maneesh. (2020). How Countries of South Mitigate COVID-19: Models of Morocco and Kerala, India. SSRN Electronic Journal. 10.2139/ssrn.3567898.
3. Ghosh, A. (2020, April 21). Explained: How Kerala's Kasargod Has fought corona virus. The Indian Express.<https://indianexpress.com/article/explained/kerala-coronavirus-cases-kasaragod-model-6371484/>
4. Kumar, D. (2020, April 14). Kerala opts for Reverse quarantine to flatten Covid-19 curve. TheNew Indian Express. <https://www.newindianexpress.com/states/kerala/2020/apr/14/kerala-opts-for-reverse-quarantine-to-flatten-covid-19-curve-2129719.html>
5. S.V.R.K.Prabhakar and Parwey, Shahid.(2019).Participatory Information Managemnt for Sustainable Disaster Risk Reduction. Switzerland :Springer.pp. 563-577.
6. Sanderson,D.(2019). Coordination in urban humanitarian response.Progress in Disaster Science, vol. 1, pp. 1 – 4. Retrieved from <http://dx.doi.org/10.1016/j.pdisas.2019.100004>
7. Sen, Dhruvajyoti.(2019).Flood Hazards in India and Management Strategies. Switzerland :Springer.pp. 126-146.
8. Singh,Ajay. (2018). Managing Risks of Disasters for Sustainable Development. Geographia IAS Institute. Retrieved from <https://www.geographiaias.com/blog/2018/05/23/managing-risks-ofdisasters-for-sustainable-development/>.
9. Varma, Vishnu. (2020, April 16). Eagle in the sky: Drone operators and Kerala Police are a winning combination to enforce lockdown. The Indian Express.<https://indianexpress.com/article/india/kerala/coronavirus-lockdown-kerala-drones-police-6365496/>
10. Beck, Ulrich.(1992). Risk Society: Towards a new Modernity. London: Sage Publications.
11. Becker, Per.(2014). Sustainability Science: Managing Risk and Resilence for Sustainable Development. Amsterdam: Elsevier
12. Chakrabarti, P.G. (2017). Managing Risks of Disasters for Sustainable Development. Yojana. January.p.11.
13. Delaney, P.C and Shrader, E. (2000). Gender and Post Disaster Reconstruction: The Case of Hurricane Mitch in Honduras and Nicaragua. Washington DC: The World Bank.
14. Denney, David. (2005). Risk and Society. London: Sage Publication.
15. Deolankar, Vivel. (2010). Disaster Management Strategies – A Global Perspective. New Delhi: Commonwealth Publishers Pvt. Ltd.

16. Douglas, Mary.(1992). Cultural Anthropology, Cultural Theory of Risk. London: Routledge.
17. Douglas, Mary.(1992). Risk and Blame Essays in Cultural Theory. London: Routledge.
18. Garlak, Teresa. (2000). Dealing with Disasters. Oxfam: Oxford Publisher.
19. Giddens, Anthony.( 1999). Runaway World. London: Profile Books.
20. Hood, Christopher and Jones, David. (2004). Accident and Design- Contemporary Debates in Risk Management. London: UCK Press, Taylor and Francis Group.
21. Jha, Madan. (2019).Natural and Anthropogenic Disasters, Vulnerability, Preparedness and Mitigation. Switzerland: Springer.pp.1-16.
22. Jha, Madan.(2019).Sustainable Management of Disasters; Challenges and Prospects . Switzerland: Springer.pp. 598-609.
23. Krishnaswami, P,B; Kumar,S& Dave, M .(2001). Gender Issues for Livelihood Options for Disaster Risk Reduction. Ahmedabad; Disaster Mitigation Institution.
24. Kumar, Santhosh . (2017). “ Managing Disaster Risks”. Yojana. January.p.15.
25. Lalit, Rahul,(2019). Kerala Floods- Need for Disaster and Fraud Crisis Management Process, PWC, Retrieved from <https://www.pwc.in/consulting/forensic-services/blogs/kerala-floods-need-for-disaster->
26. Levitt, M. (1997). Disaster Planning and Recovery. New York: John Valley and Sons, pp.50- 180.
27. Lyons, M; Schilderman T; Sanderson,D.(2011). Harnessing time: Reflections on constraints to development. Environmental Hazards, vol. 10, pp. 213 – 217. Retrieved from <http://dx.doi.org/10.1080/17477891.2011.597498>
28. Narayan, B. (2000). Disaster Management. New Delhi: APH Publishing Corporation.
29. Palanithurai, G. (2009). Panchayats in Disaster Preparedness and Management. New Delhi: Concept Publishing Company, pp.60-120.
30. Parasuram, S; Unnikrishnan P.V. (2000). Indian Disasters Report- Towards a Policy Initiative. New Delhi: Oxford University Press
31. Patel ,R; Sanderson ,D; Sitko P and De Boer, J. (2020). Investigating urban vulnerability and resilience: a call for applied integrated research to reshape the political economy of decision-making, Environment and Urbanization. Retrieved from <http://dx.doi.org/10.1177/0956247820909275>
32. Poljansek,K; Marin Ferrer,M; De Groeve; T,Clerk .(2017). Science for Disaster Risk Management: Knowing Better and Losing Less. Luxembourg: Publications Office of the European Union.
33. S.V.R.K.Prabhakar and Parwey,Shahid.(2019).Participatory Information Managemnt for Sustainable Disaster Risk Reduction. Switzerland :Springer.pp. 563-577.
34. Sanderson,D.(2019). Coordination in urban humanitarian response. Progress in Disaster Science, vol. 1, pp. 1 – 4. Retrieved from <http://dx.doi.org/10.1016/j.pdisas.2019.100004>
35. Sen, Dhrubajyoti.(2019).Flood Hazards in India and Management Strategies. Switzerland :Springer.pp. 126-146.